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ABSTRACT

Several standard measures of aptitude, interest, attitude, and personality are briefly described, including the General Aptitude Test Battery, the Clerical Skills Tests, other tests sponsored by the United States Employment Service; and the Strong Campbell Interest Inventory. This volume also reviews special assessment techniques for the severely disadvantaged including 19 paper and pencil measures, 13 work sample systems, and two pretesting orientation exercises. Each review outlines format purpose, development, intended audience, norms, validity, reliability, application to an employment and training setting, and availability. Some tests, like the Nonreading Aptitude Test Battery and the Basic Occupational Literacy Test, have been extensively normed and validated with disadvantaged populations; others have not involved this group at all. (The appendix describes relevant reference works and information services.) (CP)

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Client Assessment: A Manual for Employment and Training Agencies

by Thomas E. Backer

Volume II: Assessment Techniques

ERIC® ERIC CLEARINGHOUSE ON TESTS, MEASUREMENT, & EVALUATION
EDUCATIONAL TESTING SERVICE, PRINCETON, NEW JERSEY 08541

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PREFACE

This two-volume *Manual* provides information employment and training agencies can use in

1. developing and operating client assessment programs (Volume I); and
2. identifying, adapting or developing special assessment techniques for severely disadvantaged clients (for whom widely available standard assessment tools, such as the General Aptitude Test Battery [GATB], may be inappropriate) (Volume II).

Although the two volumes are meant to be used together, they may in some cases have independent value, e.g., for planning an assessment program for which the specific techniques have already been identified or for a research use of assessment techniques where application in a practitioner setting is not required.

Volume I: Introduction to Assessment Program Development has three sections: an *introduction* describing recent trends in client assessment for employment and training agencies, presenting some background about the *Manual,* and giving some basic concepts about client assessment; a section on *current practices* in employment and training agencies, including some detailed descriptions of existing assessment programs; and a discussion of *assessment program development,* including a conceptual model of assessment and a planning checklist for program developers. Volume I also contains an appendix listing information resources for assessment program development.

Volume II: Assessment Techniques begins with a brief review of standard assessment techniques, such as the GATB and Strong-Campbell Interest Inventory, devices now widely used in employment and training agencies. Then a catalog is given of special assessment techniques, each entered in capsule form using a standard description format. Volume II also contains two appendices: (A) a chart listing special devices available for assessment of seriously disadvantaged persons; and (B) information resources regarding assessment of the disabled.

This two-volume *Manual* is designed principally for use by employment and training agency personnel responsible for developing and operating assessment programs; other agency staff involved with these programs; and administrators of local agencies who have to make the larger decisions about assessment and how it should fit into the rest of their service delivery operation. The *Manual* may be of secondary, but in some cases important, interest to researchers and policy makers, and also to persons concerned with assessment in other service delivery settings (e.g., vocational rehabilitation agencies). It should be of direct value to persons working in client assessment programs for employment and training services that are attached to educational institutions or agencies.

I. STANDARD ASSESSMENT TECHNIQUES FOR EMPLOYMENT AND TRAINING AGENCIES

Emphasis of this Section

In this section, a brief description is given of standard measures of work-related aptitudes, interests, attitudes and personality characteristics. The section is short because primary information about these instruments is readily available elsewhere. The instruments mentioned here, however, are among some of the best validated psychological tests in existence, and they have broad utility in employment and training settings. When clients have the required reading ability, adequate prior experience with tests, and are not significantly handicapped by test anxiety or negative attitudes, the instruments described here may be excellent choices. Certainly they need to be considered as alternatives, even in programs serving primarily—but not exclusively—severely disadvantaged clients for whom these instruments would *not* be appropriate.

Not described in this section are paper-and-pencil and projective test measures of psychopathology, such as the Minnesota Multiphasic Personality Inventory (MMPI) and the Rorschach. In the writer's judgment, these clinically based test instruments are *inappropriate* for all but a very few employment and training agency assessment programs. If a significant focus of the employment and training agency is on clients who are or were mentally disturbed (e.g., ex-mental-hospital patients), then such instruments might be valid parts of an assessment program. In such instances, assessment would need to be planned for, and conducted in close coordination with, a clinical psychologist or other professional appropriately skilled in the administration, scoring and interpretation of such clinical diagnostic instruments. These applications are beyond the scope of this *Manual,* although references are provided in the appendix of Volume I that would be useful for designing such a psychopathology-oriented assessment program.

Brief Review of Standard Assessment Techniques

United States Employment Service. The history of the U.S. Employment Service's occupational test-development program is well documented in their *Test Research Report No. 31* (US DOL, 1977a). This publication gives the rationale behind the entire USES test-development program and also provides descriptions of the major instruments now available from USES:

- *The General Aptitude Test Battery (GATB)* measures the vocational aptitudes of individuals who have basic literacy skills but need help in choosing

an occupation. It consists of 12 tests measuring 9 vocational aptitudes. A Spanish edition is also available (see below). The GATB was published in 1947 after extensive occupational validation and factor analytic studies conducted during the 1930s and 1940s. This research program has continued through the present and is described in the *Manual for the General Aptitude Test Battery* (Section III: Development; US DOL, 1970a).

- *Specific Aptitude Test Batteries (SATBs)* measure the potential of individuals to acquire skills required for a specific occupation. SATBs are combinations of two, three or four GATB aptitude subtests, with associated cutting scores derived from research relating test scores to successful performance in the given occupation. More than 450 SATBs have been developed to date (US DOL, 1970a).

- *Clerical Skills Tests* measure proficiency in typing, dictation and spelling to determine qualifications for clerical jobs. Content validation was chosen as the primary validation strategy for demonstrating job-relatedness, since these tests are work samples.

  Essential knowledge and skills needed in typing, secretarial and stenographic jobs are sampled in the typing and dictation tests through the use of letters taken from actual correspondence in various industries. Contents of a general spelling test, a statistical typing test, and medical and legal spelling tests were also chosen to sample essential knowledge and skills needed in performing these clerical tasks. Detailed information on the validity, reliability and standardization of these tests on appropriate samples of employed workers is in the *Manual for USES Clerical Skills Tests* (US DOL, 1976).

- A revised *Interest Check List,* oriented to the new Department of Labor *Guide for Occupational Exploration,* has been developed for use in obtaining information on the range of occupational interests of a counselee. It consists of 20 work activity items selected to reflect jobs in each of 66 work groups representing 12 major interest areas described in the *Guide for Occupational Exploration.*

- The *Bateria de Examenes de Aptitud General (BEAG)* is a Spanish edition of the GATB, designed for use with Spanish-speaking applicants. Studies comparing GATB and BEAG scores and a nationwide operational tryout of the new battery have been undertaken by USES. Test materials and a manual (US DOL, 1977b) now are available for use by state Employment Services having Spanish-speaking applicants.

Research by USES is under way to develop an interest inventory oriented toward the fourth edition of the *Dictionary of Occupational Titles* and to the new *Guide for Occupational Exploration* (a supplement to the DOT). The

USES *Interest Inventory* will consist of job activities, occupational titles and life experience items. There will be 12 scales which will correspond to 12 interest areas into which fourth edition DOT occupations have been classified in the *Guide for Occupational Exploration*. Tied in with this test-development activity is a revision of the USES *Interest Check List*. The design of these research activities is reported in Droege & Hawk (1977) and Droege (1978).

In other ongoing research, alternate forms of the GATB are being developed, SATBs are being revalidated on minority populations (thus making these USES instruments more useful with severely disadvantaged populations), and there is an entire USES research effort directed toward the development of original test instruments intended for use with the severely disadvantaged (see Section II).

Strong-Campbell Interest Inventory. This test is described in detail in its test manual (Campbell, 1974) and also in Buros' *Eighth Mental Measurements Yearbook*. The best validated vocational interest test in existence, the Strong-Campbell has broad utility for determining areas of occupational preference for individuals who are able to complete it validly. It often may be used in conjunction with an aptitude test, such as the GATB, to provide a great deal of specific information useful for vocational counseling and in making training or placement decisions.

Other aptitude, interest and personality tests. A large range of occupationally related assessment instruments have been used in employment and training settings. A few of the most frequently employed tests are the Kuder Preference Record, Minnesota Vocational Interest Inventory, Bennett Mechanical Comprehension Test, Flanagan Aptitude Classification Test, Wechsler Adult Intelligence Scales, Edwards Personal Preference Schedule, and Sixteen Personality Factor Questionnaire. Appendix B may be consulted for details on how to acquire more information about such techniques, most of which are readily available through commercial test publishers.

II. SPECIAL ASSESSMENT TECHNIQUES FOR THE SEVERELY DISADVANTAGED: A REVIEW

Emphasis of this Section

The need for special assessment devices for severely disadvantaged individuals in local employment and training agencies is by now well known, and it seems

almost incredible that traditional paper-and-pencil tests continue to be used. Yet tests such as the GATB, Strong-Campbell Interest Inventory, Edwards Personal Preference Schedule, and Minnesota Multiphasic Personality Inventory (MMPI) *do* continue to be used—inappropriately—with seriously disadvantaged persons in many client assessment programs. This chapter is designed to present a catalog of alternatives for severely disadvantaged populations. Some were created specifically for use in employment and training agencies; others were not, but appear to have potential for adaptation.

Disadvantaged individuals frequently have had little exposure to traditional paper-and-pencil tests; reading and arithmetic abilities may be limited. To the extent that "test wiseness" and numerical or reading skills are important in test performance, scores on a test like the GATB may suffer—but these handicaps to test performance *may or may not* be factors that would also hinder job performance. If an examinee cannot read and understand test directions or individual items, he will perform poorly regardless of his real capacity on the aptitude being measured. Test performance will predict job success, however, only if (a) the person really *is* low on the aptitude under consideration or (b) reading skills themselves are important to job performance. Thus, a potential auto mechanic who is functionally illiterate may perform quite poorly on a paper-and-pencil test of numerical reasoning, not because he or she lacks the capacity the test is intended to measure, but rather because the mode of assessment does not permit his or her characteristics to be tapped in a relevant manner. It is ironic that, with some exceptions, the *greater* the need of the client for employment and training services, the *less* useful is the GATB for assessment, since the most pervasive characteristic of cultural disadvantagement is educational deficiency.

The Strong-Campbell Interest Inventory and the MMPI present similar kinds of problems in terms of item content, format and directions, and so forth. On all such tests, there is great difficulty in obtaining valid and meaningful results (on a test designed for and normed on individuals of high-school literacy) when the test is administered to disadvantaged individuals of fourth-grade literacy who cannot understand half the words on the test. At the very least, when instruments designed for a high-literacy subject population are applied to a low-literacy one, every measure becomes in part a *test of vocabulary and reading skills alone*. Those who do well are reasonably literate and, in addition, may rank high in the characteristic being measured (assuming test validity with appropriately literate subjects). Those who score low may be low on the ability which the test purports to measure, in reading skills, or both.

On interest and personality inventories, where there are no right or wrong answers in the traditional sense, the results can be even more ambiguous. In short, if an examinee cannot understand a test item or test direction, he or she cannot be expected to respond meaningfully. The problem is compounded by

the loading of cultural experience in many test items and by the anxiety-producing quality of tests for many of the disadvantaged. Harrison and Brown (1970) illustrate the essential point about culture-bound tests by "turning the tables." They constructed some items of "straightforward" information or definition that would discriminate against many white, middle-class individuals:

1. "T-Bone Walker" got famous for playing
   a. trombone
   b. piano
   c. "T-flute"
   d. guitar
   e. hambone
2. A "Gas Head" is a person who has a
   a. fast-moving car
   b. stable of "lace"
   c. "process"
   d. habit of stealing cars
   e. long jail record for arson
3. If a man is called a "Blood," then he is a
   a. boxer
   b. Mexican-American
   c. Negro
   d. hungry hemophile
   e. red man or Indian
4. "Bird" or "Yardbird" was the "jacket" that jazz lovers from coast to coast hung on
   a. Lester Young
   b. Dorothy Armstrong
   c. Billy "the Lion" Smith
   d. Charlie Parker
   e. Muggsy Spanier
5. Cheap chitlings (not the kind you buy at a frozen-food counter) will taste rubbery unless they are cooked long enough. How soon can you quit cooking them to eat and enjoy them?
   a. 45 minutes
   b. 2 hours
   c. 24 hours
   d. 1 week (on a low flame)
   e. 1 hour

6. Who did "Stagger Lee" kill (in the famous blues legend)?
   a. his cousin
   b. Frankie
   c. Johnny
   d. his girl friend
   e. Billy

Examples from standard aptitude, personality and interest tests that would present similar problems to culturally disadvantaged subjects could be given by anyone who browses through these instruments.

Some of the shortcomings of traditional paper-and-pencil tests, briefly summarized, are as follows:

- Most traditional paper-and-pencil tests are similar to classroom examinations with which many seriously disadvantaged persons have a history of failure, and which, therefore, may make them feel anxious and uncomfortable.
- Many of these tests have written directions at a rather high reading level which must be understood by the testee if measurements are to be valid.
- Individual test items also may be at a relatively high reading level and may reflect cultural content of which the disadvantaged have little knowledge.
- Item content of tests designed for children but administered to disadvantaged adults may be simple enough in reading level but uninteresting or insulting. This can greatly damage motivation to perform.
- Many severely disadvantaged persons have limited experience with tests of any kind and so do not have the "test wiseness" important to yielding test results that fairly estimate characteristics/capabilities.
- Many tests do not seem to bear any significant relationship to the individual characteristics pertinent to job success for most of the jobs the disadvantaged will be seeking.

The rest of this section presents descriptions of several dozen assessment techniques that may be useful in assessment programs for local employment and training agencies which serve significant numbers of the seriously disadvantaged. Before moving to a description of how this catalog of assessment techniques is organized and presented, it is first necessary to offer several cautions about how this information should be used. One is that, as mentioned above, almost any employment and training agency *will* serve some clients who are not significantly enough disadvantaged that they cannot be assessed well with the standard instruments. For those able to complete it validly, the Strong-Campbell Interest Inventory may be a much better choice than the

vocational interest measures contained in this catalog. Similarly, for subjects possessing the required skills and background, the GATB is a highly sensitive and useful tool for appraising vocational aptitudes. Thus, this catalog must not be looked on as defining the limits for what should be included in an employment and training agency assessment program. Far from it—the instruments included here have their own special uses, and *limitations*, just as the traditional techniques do.

Another caution has to do with the stage of development of many of these instruments. Some, like the NATB, BOLT, and some of the work sample systems, have been extensively normed and validated with disadvantaged populations and may be installed in some cases without significant adaptation. Many other instruments listed here, however, are still in relatively early stages of development; some have not been field tested with seriously disadvantaged populations at all. In the latter cases, it is imperative that assessment program developers look on instruments or techniques in this catalog as an inspiration for ideas, not as a shopping list from which assessment tools can be selected and set in place in an assessment program without careful examination, local norming and validation, and inclusion as a thoughtfully organized *part* of an assessment program.

Adaptation seems to be the name of the game in developing a good assessment program. This reality was already evident in the descriptions of assessment programs presented in Section II of the first volume. Therefore, the reader of this catalog should be looking for ideas, for useful components, and for assessment devices that fit into the overall context of a carefully designed program.

Each capsule review here follows a standard format:

- TITLE OF TEST
- DESCRIPTION—what kind of device it is
- FORMAT—item content (sometimes with sample items), administration time, scoring procedures
- STAGE OF DEVELOPMENT—how and why the test was created, where it has been used, what kinds of populations have taken it, and what kinds of normative, reliability and validity evidence are available
- APPLICATION—A critical evaluation of how the device might be applied in an employment and training setting
- ACCESS—how to get a copy of the assessment device and/or more information about it

The availability of information to include under these headings varies, of course, from device to device. Prices are not given because inflation would

make such data invalid before this volume was published.

The catalog has three main sections:

- *paper-and-pencil devices* (including aptitude, interest and personality or attitude measures)
- *work sample systems*
- *pretesting orientation materials*

Presentation is alphabetical by title within each main category.

A very few of the assessment strategies or devices presented in Backer (1972) have been deleted from this list, such as O'Mahoney's Self-Concepts Profiling Technique, and Daane's Vocational Exploration Groups. The reader is referred to the earlier publication* for discussions of these two approaches and also for coverage of topics such as job-man matching and criteria development.

Catalog of Assessment Techniques

PAPER-AND-PENCIL DEVICES

TITLE OF TEST: **Adult Basic Learning Examination (ABLE)**

DESCRIPTION: Measure of basic learning skills, using subject matter drawn from adult life

FORMAT: The test includes a vocabulary test, dictated so that no reading is required; an arithmetic problem-solving test, which can either be dictated or taken in conventional reading and response format; and a short screening test, called "SelectABLE," for use in determining the most appropriate level of ABLE for each adult applicant. Three levels of the ABLE battery are available, each geared to a particular educational level. Levels One and Two require about two hours' administration time, and Level Three, about three hours. Scoring can either be by hand or (for Level Three only) through the publisher's computer scoring service.

STAGE OF DEVELOPMENT: ABLE was developed to provide a general intellectual aptitude screening tool for use with disadvantaged adults, one that overcomes the traditional shortcoming of tests for low reading level involving items geared to children rather than adults. Extensive normative data and a test manual are available from the publisher although there is no mention of the availability of validity data.

*Available from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22151. Accession No. PB-213167/AS.

APPLICATION: General screening for determining training needs or placement options

ACCESS: Available from the Psychological Corporation, New York

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TITLE OF TEST: **Basic Occupational Literacy Test (BOLT)**

DESCRIPTION: Test of basic reading and arithmetic skills for use with educationally disadvantaged adults

FORMAT: On the BOLT, reading skills are assessed by a reading vocabulary subtest and a reading comprehension subtest; arithmetic skills are assessed by an arithmetic computation subtest and an arithmetic reasoning subtest. The subtests are available at varying levels of difficulty. The test may be scored either by hand or by using machine-scoring answer sheets.

STAGE OF DEVELOPMENT: The BOLT was developed to measure aptitudes using test-item content that is relevant for adults rather than children. The BOLT wide-range scale is used to indicate what level BOLT subtest should be administered to a given client. In the BOLT manual (1972), detailed information about test development, normative data, reliability data, and an in-progress validation program are given.

APPLICATION: General screening for determining training needs or placement options

ACCESS: Information on availability of the test, answer sheets and test manual, as well as the wide-range scale for determination of appropriate BOLT subtests, can be obtained from state Employment Service offices.

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TITLE OF TEST: **Biographical Information Blank (BIB)**

DESCRIPTION: Brief questionnaire eliciting autobiographical data from the examinee

FORMAT: The BIB is a questionnaire form containing, in its present stage, 66 items of biographical information in the following categories: home and family situation—past and present; high school experiences and perceptions; work history including job turnover record; present job responsibilities and obligations; preferences and needs regarding work, the work place and income; life goals and philosophy; self-image; and time organization habits. Items were specifically constructed for use with subjects reading on fourth- to sixth-grade levels. Much of the life-history data that BIB requests may be objectively verified, discouraging cheating or conscious distortion. On the other hand, since there are no right or wrong answers in the traditional sense, those having negative experiences with tests may be less threatened by the BIB. The BIB can be scored routinely by clerical personnel using scoring keys developed by the test's creators.

STAGE OF DEVELOPMENT: The BIB was developed under a research contract from the Department of Labor by Richardson, Bellows, Henry & Company, Inc. (RBH) and has been used in predicting length of participation in the Job Corps (RBH, 1970) and for predicting job tenure among Employment Service applicants (RBH, 1971). In a study completed in 1975, the BIB was used to predict (1) three-month employment tenure

among disadvantaged Employment Service (ES) applicants who had received no previous employment and training agency services prior to job placement, and (2) completion of job entry stages among Work Incentive (WIN) program enrollees. Results of this study indicated that persons scoring higher on the BIB were more likely to remain employed or to complete job entry on the WIN program at significantly higher rates than those in the lower score groups. The most recent form of the BIB was used in a study by RBH (1979) to determine operational utility of scoring keys developed in the previously mentioned work. This study involved administration of the BIB to incoming WIN registrants in 10 cities. Again, there was a strong correlation between BIB score and WIN outcomes in the participating cities. In this study, it was also found that the success levels (percent employed) of the cities which reported actually using BIB scores in making program decisions were substantially higher than those which did not. In fact, the average percent employed was almost twice as high for the "use cities."

The 1979 RBH report concludes by recommending that WIN use BIB to help identify persons most likely to break out of the welfare cycle if WIN assistance is provided. A scoring key developed through the RBH research is recommended for this purpose.

In the various research reports mentioned in this description, substantial evidence about the reliability and validity of the BIB is available, along with some normative data.

APPLICATION: RBH advised the use of the BIB as a tool for identifying those most likely to benefit from services in WIN programs; by analogy, other seriously disadvantaged employment and training agency applicants could be identified using such a system. However, there are still some problems with the BIB that employment and training agencies would need to consider carefully before making operational use of the instrument at this time.

First, there was evidence, from RBH's own research, of reluctance by a number of the experimental participating cities in their 1979 study to use the BIB as a part of the service process. Clearly, substantial education of employment and training agency staffs may be required to convince those who would have to use the BIB that it would be likely to have value and to give them careful training in its proper use.

Also, it is not clear from the research conducted so far whether the BIB is really picking out those individuals most likely to benefit from a particular service delivery process.

In fact, because high scorers on the BIB may well be persons who would be likely to get a job even without receiving services, using the BIB as a selection tool (with a high score selecting into the program) may actually select for service those who need it least.

Also, since the use and non-use cities in the 1979 study were allowed to self-select, there is no reliable way to identify and measure what other variables may have been operating in promoting a higher percentage of employment for those cities that used the BIB scores versus those that did not.

On the plus side, the BIB has now been administered to a very large group of seriously disadvantaged individuals. It has been refined a number of times, as have its scoring procedures.

ACCESS: RBH has prepared a questionnaire booklet (known variously as Registrant Record or BIB) and a scannable answer sheet. Its research reports contain considerable

reliability and validity data. Richardson, Bellows, Henry & Company, Inc. is located at 1140 Connecticut Avenue, N.W., Washington, DC 20036.

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TITLE OF TEST: **Colorado Battery**

DESCRIPTION: Series of tests developed by the Colorado State University Manpower Laboratory for use in work with the severely disadvantaged

FORMAT: The *Social Access Questionnaire (SAQ)* contains 89 items measuring six personality factors. It also contains questions about personal history. Items are either multiple-choice or use a bipolar agree-disagree answer scale. This test was designed to tap social and personality characteristics that contribute to "job deviance." Subjects fill out the measure either individually or in large groups. The *Work Requirements Rating Scale* is a 47-item questionnaire dealing with behavior on the job and is designed to measure the consequences of differing vocational attitudes among worker, supervisor and employer. The *Importance Questionnaire* is a test of 20 items relating to job conditions or opportunities, each rated on a scale of from very important to very unimportant. The *Employment Satisfaction Questionnaire* has 20 items measuring job satisfaction on a scale from very unsatisfied to very satisfied (items were taken from the Minnesota Employment Satisfaction Questionnaire). The *Job Conditions Questionnaire* is an eight-page questionnaire concerning perceived work environment. The *Job Expectancy Rating* is a single-page rating form for evaluation by workers of six basic job conditions. The *Job Importance Prediction Scale* is a 12-item scale filled out by workers and supervisors to check for congruencies and discrepancies between the two groups regarding important job conditions. The *Self-Acceptance Questionnaire* is a 15-item yes-no measure of highly loaded self-evaluation items, e.g., concerning respondent's sexual behavior. The *Similarity Scale* is an 80-item checklist measuring identification with militant or activist groups.

Also part of this battery is the revised *Miskimins Self-Goal-Other Discrepancy Scale (RMSGO)*, which was discussed in Bachner (1972) as being inappropriate for use with the severely disadvantaged—and it, therefore, will not be discussed here.

These forms and instruments are presented in a *Research Manual* (Manpower Laboratory, 1971) that includes a copy of each device plus information concerning form, structure, intended use, mode of administration, and reliability and validity data.

STAGE OF DEVELOPMENT: These instruments were developed under funding from the Department of Labor and were reported in a series of final report volumes on the multifaceted research project called "Applied Programs in Manpower Development." To the writer's knowledge, they are not presently in use, and the data base supporting them is quite limited.

APPLICATION: These instruments would primarily be useful as an idea source for employment and training agencies.

ACCESS: Copies of the *Research Manual* may be available from the Department of Labor or through use of one of the computer-assisted information retrieval systems mentioned in the Appendix of Volume I of this *Manual*.

TITLE OF TEST: **Fundamental Achievement Series (FAS)**

DESCRIPTION: Two tape-recorded tests for use with individuals having limited reading skills, tapping knowledge and capabilities that an applicant may reasonably be expected to have acquired in the course of ordinary daily living

FORMAT: The FAS-Verbal is a 30-minute test; it measures the ability to read signs, use telephone directories and recognize and understand commonly used words. The FAS-Numerical also takes 30 minutes to administer; it measures the ability to tell time, recognize numbers, understand calendars and solve numerical problems. The tape recordings insure accurate timing and identical presentation to all who take the test, eliminating examiner bias. Integrated question booklets and answer sheets are provided. Scoring procedures and other details of administration are presented in a manual available from the test publisher.

STAGE OF DEVELOPMENT: The Fundamental Achievement Series was developed for use in selecting applicants for job-training programs and covers the range from basic literacy to slightly above the eighth-grade level. Information on normative, reliability and validity data is available in the publisher's manual.

APPLICATION: For use as a basic screening device in employment and training agency service programs

ACCESS: Available from the Psychological Corporation, New York

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TITLE OF TEST: **GATB / NATB Screening Device**

DESCRIPTION: A brief written test consisting of the wide-range scale of the Basic Occupational Literacy Test (described above) for use in determining whether a particular service applicant should be given the GATB or NATB

FORMAT: The test consists of arithmetic and vocabulary items and is scored using two stencils. Further information on administration and scoring procedures is available in the *Manual for the GATB / NATB Screening Device* (USES, 1973).

STAGE OF DEVELOPMENT: Details on development and use of this device also are presented in the 1973 *Manual*. These include cutoff scores to be used in determining whether a given applicant should take the GATB or NATB.

APPLICATION: For employment and training agency assessment programs where both the GATB and NATB may be administered, to determine which test a given applicant should take

ACCESS: Information about availability of the test, scoring stencils and the *Manual* can be obtained from state Employment Service offices.

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TITLE OF TEST: **Goodwin Work Orientation Questionnaire**

DESCRIPTION: Questionnaire designed to measure work orientations of WIN trainees

FORMAT: The Work Orientation Questionnaire was devised to measure attitudes, goals, beliefs and intentions with respect to the world of work. The questionnaire consists of several sets of questions about work that are to be rated on four-step "ladders" ranging, for example, from "agree" to "disagree." Both a self-administering form and a home-interview form, with questions read by the interviewer, have been created.

STAGE OF DEVELOPMENT: Data have been gathered on some 1400 WIN trainees and were factor-analyzed to yield clusters of items defining work orientations. Goodwin (1971) suggests that, with appropriate refinement, the Work Orientation Questionnaire might be used to help WIN staff acquire more accurate perceptions of their trainees' work orientations for subsequent use in counseling and placement.

APPLICATION: Since this instrument was developed only in a preliminary research study and no extensive reliability or validity data are available, it should be considered primarily as a source of ideas for use in employment and training situations where measurement of work orientation may be important.

ACCESS: Copies of the research report are available from Dr. Leonard H. Goodwin, The Brookings Institution, Washington, D.C. 20036.

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TITLE OF TEST: **Indik Work Motivation Scales**

DESCRIPTION: Interview-format test designed to estimate work motivation

FORMAT: The interviewer reads a collection of statements and asks the interviewee whether he/she agrees strongly, agrees mildly, is undecided, disagrees mildly or disagrees strongly. Also, data are collected by having the interviewee choose one of four possible endings to unfinished statements read by the interviewer. Six areas of motivation are assessed: the motive to work, the motive to avoid work, the expectancy to work, the expectancy to avoid work, the incentive to work and the incentive to avoid work. In a research study, Indik (1966) found that these scales were modestly related to training and placement success for MDTA enrollees. An important finding was that the motivational characteristics that seem to facilitate stable employment are not necessarily those that facilitate success in training. No further work with this instrument apparently has been conducted, and normative, reliability and validity data are not available.

APPLICATION: Since this instrument has received only research use so far, it would primarily be a source of ideas for employment and training agencies concerned with the measurement of motivation to work.

ACCESS: Copies of the research report are available from Dr. Bernard Indik, Rutgers University, New Brunswick, NJ 08903.

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TITLE OF TEST: **Jorgensen Interpersonal Relationships Scales**

DESCRIPTION: Two instruments designed for a research study of the relationship of interpersonal facility to placement success

FORMAT: The *Social Vocabulary Index* consists of six scales. (1) the *Self-Concept Scale*, a 20-item test of opinions of self consisting of statements beginning with "I am . . ."; responses are chosen from frequency alternatives (most of the time—hardly ever); (2) the *Self-Acceptance Scale*, a 20-item adjective check list; (3) the *Ideal Self Scale* with the same items as the self-concept scale except that the statements are stemmed "I would like to be . . ."; (4) *Concept of Others Scale* with the same items but stemmed "Other people are . . ."; (5) a *Vocabulary Scale* designed to measure subjects' reading comprehension; and (6) a *Social Desirability Scale* consisting of 33 statements about personal behavior which the subject is asked to rate true or false for himself.

The *Revised Interaction Scale*, the other instrument used in this study, is a two-part paper-and-pencil questionnaire that is used by both counselor and counselee to rate the counseling interaction.

STAGE OF DEVELOPMENT: In a study using the two instruments with rural rehabilitation clients (Jorgensen et al., 1968), significant differences in test scores were found between females who obtained their own jobs and those who had placement assistance. These modest results suggest some possible utility of the measures for predicting which clients need placement services. No other normative, reliability or validity evidence is available.

APPLICATION: Since this instrument has been used only in research, it would primarily be a source of ideas for employment and training agencies concerned with measurement of interpersonal relationships as a component of success in obtaining a job.

ACCESS: These instruments are available from G.Q. Jorgensen at the University of Utah, Salt Lake City, Utah 84112.

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TITLE OF TEST: **Mandell NYC Program Interview Forms**

DESCRIPTION: Interview forms designed to gather data about job perceptions of Neighborhood Youth Corp (NYC) enrollees

FORMAT: Questions for enrollees are phrased in simple language in these instruments. Since interviews are conducted individually, the interviewer is permitted to adapt wording of questions to the respondent's level of understanding. The forms used include a general section for all groups of subjects, with separate background forms for enrollees and supervisors and employers of NYC enrollees studied in this research (Mandell, Blackman & Sullivan, 1969). One of the study's purposes was to compare enrollee perceptions with those of supervisors and employers. During the interviews, data were collected for the following variables from supervisors and employers: skills, tolerance for behavior variability, employer-employee relationship, supervisor-employee relations and employee benefits.

STAGE OF DEVELOPMENT: These interview forms were developed for research uses only, and no validity, normative or reliability data are available.

APPLICATION: The potential utility of these survey forms for other assessment purposes does not seem to be very great, although they could be used in certain assessment programs for obtaining perceptions of applicants regarding job-related variables.

ACCESS: Copies of the research report are available from Dr. Wallace Mandell at Wakoff Research Center, Staten Island, New York.

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TITLE OF TEST: **Nonreading Aptitude Test Battery (NATB)**

DESCRIPTION: The NATB consists of 14 tests measuring the same nine aptitudes measured by the GATB. It was developed for use with individuals who do not have sufficient literacy skills to take the GATB.

FORMAT: The NATB measures aptitudes in the following areas: intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor coordination, finger dexterity and manual dexterity. Apparatus tests are used for measuring finger dexterity and manual dexterity, and the other test portions are designed for paper-and-pencil format. It requires about 3¼ hours to complete; some of its subtests involve no reading or vocabulary skills at all. Others use familiar stimulus objects with which even the most seriously disadvantaged should be familiar. The NATB manual (US DOL, 1970b) contains information on administration, scoring and interpretation. Paper-and-pencil test booklets and answer sheets are integrated, and machine scoring is available through National Computer Systems in Minneapolis.

STAGE OF DEVELOPMENT: The NATB was originally developed in recognition of the shortcomings of the GATB for use in employment and training agency services to the severely disadvantaged. Extensive normative and reliability data are available, and validity studies have been under way for some time.

APPLICATION: The NATB is an instrument of choice, particularly when the GATB/NATB Screening Device is used, for seriously disadvantaged applicants in employment and training agency service programs, where a general measure of intellectual aptitude is required.

ACCESS: Information about availability of the NATB and associated manuals and scoring materials can be obtained from state Employment Service offices.

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TITLE OF TEST: **Oral Directions Test**

DESCRIPTION: Direct measure of an applicant's ability to understand and follow oral directions

FORMAT: The applicant responds by marking the answer document in accordance with instructions dictated on a cassette tape or record. It requires 15 minutes to administer and is also available in a Spanish-language version.

STAGE OF DEVELOPMENT: The Oral Directions Test was developed as an aid to selecting more able workers among applicants having a limited education and among applicants with limited knowledge of English. According to the test publisher, it is suitable for selecting applicants for maintenance and service work in public institutions, transportation systems, stores, hotels, etc., as well as in factories and shops. Information on normative, reliability and validity data is available in a test manual.

APPLICATION: This test may have some applicability in employment and training agencies for use as a general screening device.

ACCESS: Available from the Psychological Corporation, New York

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TITLE OF TEST: **Picture Interest Exploration Survey (PIES)**

DESCRIPTION: A career interest inventory presented in a visual, nonreading format

FORMAT: The PIES is designed to help in the investigation of individuals' vocational interests and to apply this information to pursuing career goals. A PIES test kit includes 160 color slides, 2 slide trays, 1 audio tape, 2 sets of career reference cards, 1 student-teacher manual and 50 response sheets. Colored 35mm slides are utilized to depict 12 specific careers within each of 13 career clusters. The career-cluster system is based on the *Occupational Outlook Handbook* and is cross-referenced to the *Dictionary of Occupational Titles*. Each slide shows a worker's hands performing a task considered to be representative of a particular occupation within a career cluster. Users indicate interest in a particular career by circling the number of that slide on their response sheet. The survey may be administered individually, in a group, or self-administered. Users may determine their own "score," or interests, by simply counting the number of items they circled and then determining which career cluster contained the most items marked. Because hands are depicted performing tasks, the developer of PIES claims a minimum of distraction or bias in occupational selection due to physical attractiveness of the workers or ethnic, sex or racial characteristics.

STAGE OF DEVELOPMENT: PIES has been developed primarily for use with adolescents, and a validation study (Eubanks, 1977) was conducted using this population. Normative, reliability and validity data are available in Eubanks' report. Validity in the Eubanks study was assessed using a concurrent measure (comparison with other vocational interest test scores), and there is to date no concrete evidence as to the actual efficacy of PIES in predicting career selection or facilitating the career-counseling process.

APPLICATION: Employment and training agencies dealing with youth service programs might consider using PIES as a career exploration or counseling tool although it lacks clear validity data.

ACCESS: PIES is available from Education Achievement Corporation, P.O. Box 7310, Waco, Texas 76710.

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TITLE OF TEST: **Program for Assessing Youth Employment Skills (PAYES)**

DESCRIPTION: A battery of seven tests designed specifically for use with disadvantaged youth in guidance counseling

FORMAT: PAYES consists of three separate booklets: Booklet 1 contains three attitudinal measures; Booklet 2, three cognitive ones; and Booklet 3, a vocational interest inventory. Job-holding skills, attitude toward supervision and self-confidence are the three major attitude areas covered. Cognitive measures of job knowledge, job-seeking

skills and practical reasoning are also surveyed. The measures are designed for adolescents and young adults with low verbal skills; pictures help to clarify many of the questions presented. The pictures in this "unisex" test battery are designed so that all items are equally appropriate for males and females.

PAYES is administered orally to small groups in an informal manner. Students mark their answers directly in a test booklet. The measures are scored locally, using scoring directions provided, so that counselors can get quick score results.

STAGE OF DEVELOPMENT: PAYES is based on a series of research and test-development studies, undertaken by Freeberg and his colleagues at Educational Testing Service, resulting in the development and experimental application of the "ETS Test Battery for Disadvantaged Youth," described in Backer (1972).

The original test-development effort, sponsored by the Department of Labor, began with a logical analysis concerning test format (Freeberg, 1968). Backer (1972) reviews these test-development procedures. Subsequent research included developing criteria for test validation (Freeberg & Reilly, 1971) and a longitudinal validation study (Freeberg, 1974; Freeberg & Shimberg, 1976). Results from validity studies to date have been modest, but available evidence does suggest that the measures may have some potential for use in guidance work with disadvantaged youth.

At the present time, a revised version of a user's guide for PAYES is being prepared, as is a technical manual that will provide a fairly comprehensive discussion of the rationale for the test constructs and their design. This manual also will summarize results obtained in the validity studies mentioned above. Four of the seven measures (job knowledge, job-holding skills, job-seeking skills and self-confidence) are currently in use nationwide by the U.S. Department of Labor for program evaluation purposes with longitudinally obtained samples of youth program enrollees. The evaluations include collection of post-program outcome data and, thus, provide an opportunity to develop larger-scale norms and to look at predictive validities for the four measures. Updated validity information will be fed into subsequent revisions of the technical manual.

APPLICATION: In the user's guide for PAYES, it is explicitly stated that the battery should not be used to determine program participation, nor is it to be thought of as a substitute for counseling but rather as a supplement to it. The PAYES guidance battery is seen by its developers as a tool that deals with aspects of basic employment training considered essential in more vocational and work training programs. Further validity data will be needed in order to establish that PAYES can have a significant impact on guidance decisions.

ACCESS: The test battery, administrator's manual and user's guide are available from Cambridge Book Company, New York.

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TITLE OF TEST: **Self Interview Check List (SICL)**

DESCRIPTION: Vocational interest checklist for use in the Cleff Job/Man Matching System

FORMAT: Examinees complete this checklist without supervision, indicating behavioral units of work (conceptualized along the dimensions "things, people and ideas") they like best and dislike most; then they indicate those they have done most and those they have done least. The checklist is scored to produce two applicant profiles: one describes activities preference, the other activities experience, arranged according to 16 dimensions of work. Results can then be compared with data on the characteristics of the jobs, organized along the same basic dimensions.

STAGE OF DEVELOPMENT: Initial development of the Job/Man Matching System and the SICL are described in Cleff & Hecht (1971). Conceptual underpinnings of this system, and its application in a number of settings, are given in Cleff (1977). The latter publication includes details on several validation studies that have been completed using the Job/Man Matching System. Reliability data also are provided. Information is given on an operational system for the Cleff Job/Man Matching process that includes computer analysis and profiling of results, based both on information gathered about applicants from the SICL and information collected about jobs. Uses of this approach, with a number of adaptations as required for local circumstances and different types of clients, are given for an employment and training agency (City of Cincinnati), private industry, and an adaptation by PREP, Inc. (see description of COATS, below). A separate validation study of the Job/Man Matching System (Nathanson, 1975) also is described.

APPLICATION: The Cleff Job/Man Matching System (CJMS), and the Self Interview Check List (SICL), which is the basic instrument for gathering client data, have received sufficient research attention to be ready for operational use in employment and training settings. The reader is referred to the description below of COATS for what is perhaps the best-developed application of this approach.

ACCESS: Available from Dr. Samuel Cleff at the Center for Human Technology, Princeton, New Jersey

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TITLE OF TEST: **Tolerance for Bureaucratic Structure Scale (TBS)**

DESCRIPTION: Questionnaire intended to measure extent to which an individual has a preference for jobs typical of large bureaucratic organizations (i.e., highly structured jobs)

FORMAT: The Tolerance for Bureaucratic Structure (TBS) Scale was developed as part of a study designed to create conceptual and operational tools for achieving a more accurate match of persons to jobs. The TBS Scale is a self-report questionnaire with 43 items written in simple English. Sample items are, "I would like to have a job where I could set the hours" or "If everybody obeyed the rules at work, there would be fewer accidents." Each item is rated on a four-point scale (strongly disagree-strongly agree).

STAGE OF DEVELOPMENT: In some preliminary validity studies, significant, although modest, correlations were obtained between bank employees' TBS scores and ratings by supervisors. Some further validity data from employment and training applications of the TBS Scale are contained in a test manual available from the instrument pub-

lisher. This manual also provides information on test administration and normative and reliability data. General background on the TBS Scale and the concepts underlying it are contained in Baker et al. (1974).

APPLICATION: In its present stage of development, the Tolerance for Bureaucratic Structure Scale is probably not ready for operational use in employment and training settings but could serve as a valuable source of ideas or could be used as a counseling tool, especially with respect to job opportunities requiring a person to adjust to a high degree of structure and bureaucratic regulation.

ACCESS: Available from the Center for Policy Research, New York

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TITLE OF TEST: **Tseng Rating Scales**

DESCRIPTION: Short scales for measuring self-perception, locus of control and need for achievement

FORMAT: The Tseng Rating Scales were developed in three related studies designed to investigate relationships between work-related characteristics of vocational rehabilitation trainees and personality variables. Locus of control was measured in Tseng (1970) using the Rotter Internality-Externality Scale; need for achievement was measured in Tseng (1972a) by the achievement scale of the Edwards Personal Preference Schedule; and self-perception in Tseng (1972b) using a rating scale devised by the investigator.

STAGE OF DEVELOPMENT: Each of these studies related scores on the test instrument used to variables such as job proficiency, employability and training satisfaction of rehabilitation clients. Some efforts were made to adjust for low reading levels or lack of test experience by participating research subjects (e.g., via individualized testing sessions), but the researcher acknowledges that these measures have relatively little to recommend them for use with seriously disadvantaged individuals. Correlations between test scores and performance criteria are quite modest.

APPLICATION: Both because of limitations in use of these instruments with the severely disadvantaged, and because the results obtained by Tseng are quite modest, these scales probably can serve only as a source of ideas for application in employment and training settings.

ACCESS: Available from M.S. Tseng at West Virginia University

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TITLE OF TEST: **Vocational Opinion Index (VOI)**

DESCRIPTION: Short paper-and-pencil instrument used to measure job readiness

FORMAT: The VOI consists of 58 items which can be answered in about 20 minutes. It can be administered either in group settings or individually. Anyone who can read English or Spanish at the fifth-grade level should be able to respond meaningfully to all the questions. There are two forms (Forms A and B) of the VOI available in both English and Spanish. There are also A and B forms which can be used for follow-up once the person has left a training program.

Because of the complex computer scoring required by the VOI, Associates for Research in Behavior, the test publisher, has established a scoring service. Completed VOIs mailed to Associates for Research in Behavior will be scored and a diagnosis report will be mailed back within 10 days. Each respondent's answers are added to the data base so that diagnoses provided use the most up-to-date data available.

STAGE OF DEVELOPMENT: The VOI is the product of a series of research studies conducted by the Associates for Research in Behavior (Wolf, Jackson & Finegold, 1971; Benson & Whittington, 1973; Benson & Whittington, 1974).

The VOI determines an individual's job readiness by assessing three psychological dimensions:

- Attractions to work
- Losses associated with obtaining and maintaining a job
- Barriers to employment

For those individuals who score low on job readiness, the VOI also provides a diagnosis of reasons contributing to the individual's classification as a potential nonworker. This diagnosis can be used to develop a remedial prescription to help an individual develop a more work-relevant posture and attitude.

The VOI was designed, tested and normed specifically for a disadvantaged population. Norms are based on the responses of over 2,000 males and females from 13 MDTA centers across the country. The normative sample was comparable to the national MDTA population with respect to age, sex, race/culture and education.

APPLICATION: Although the validity data on the VOI are still quite modest, it may have some operational utility in certain employment and training settings.

ACCESS: Available from the Associates for Research in Behavior, Inc., 34th & Market Streets, Philadelphia, PA 19104

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TITLE OF TEST: **Work Relevant Attitudes Inventory (WRAI)**

DESCRIPTION: Instrument for use in evaluating the effectiveness of employment and training programs

FORMAT: The WRAI grew out of a larger research program concerned with the effectiveness of selected NYC programs (Walther, 1970). The test consists of 26 items arranged into three scales: optimism, self-confidence and unsocialized attitudes.

STAGE OF DEVELOPMENT: Walther (1975) reports the use of the WRAI in two longitudinal studies: (a) a study of out-of-school Neighborhood Youth Corps (NYC) programs in four cities involving 502 subjects and in which the WRAI was administered three times; and (b) a study of the second demonstration of a New Educational Program (NEP-2) in five employment and training programs involving 526 subjects. Results indicate that the WRAI was able to differentiate between subjects making a "good" and a "poor" adjustment to work, that the change in WRAI scores while participating in the NYC program was in a positive direction for subjects making a "good" adjust-

ment to work, and negative for subjects making a "poor" adjustment. Further information on reliability and validity is available in Walther (1975). The author feels that the WRAI can be used both as a measure of program effectiveness in manpower service delivery systems and as a help in diagnosing the needs of new program participants.

APPLICATION: Sufficient reliability and validity evidence is available to permit consideration of the WRAI for use as a diagnostic tool as well as an assist to counseling.

ACCESS: Walther (1975) includes a copy of the WRAI, and the report is available from the author, Dr. Regis Walther, at George Washington University, Washington, D.C.

WORK SAMPLE SYSTEMS

Background. Work sample approaches for assessing job-relevant characteristics of severely disadvantaged people have received much attention in the last few years. Developments have been reported in the po ular press (newspapers, *Business Week* magazine, etc.); work sample systems such as those developed by J.E.V.S. and COATS are now being used by employment and training agencies across the country.

The work sample technique has been traced back to the beginning of this century. Hugo Munsterberg built a model streetcar to use in selecting streetcar operators in 1910 (Hoffman, 1969). After World War II, the Portvillez school in Belgium evaluated the potential of disabled soldiers for trade training by having them briefly try out activities in the available trade classes. In rehabilitation of the physically or mentally handicapped, pioneer development efforts at the Institute for the Crippled and Disabled (ICD) extend back to the 1930s.

At ICD, staff members first used standardized tests as part of rehabilitation counseling about 1930. They discovered that most physically or mentally handicapped people performed poorly on these tests and often were erroneously deemed unemployable. Such aptitude tests usually emphasized speed, accuracy and types of life experience that were neither within the sphere of competence of the handicapped nor particularly relevant to the types of jobs that they might actually hold. ICD thus began developing work samples as an alternative means of evaluating the vocational potential and rehabilitation needs of its clients.

In principle, all work samples represent activities or components of activities abstracted from actual job tasks. Many work samples are highly similar to real job tasks and simply substitute job production tools and materials for paper-and-pencil tests or special test apparatus. Thus, for example, a work sample designed to appraise manual dexterity for a production-line assembly job might require that the examinee assemble nuts and bolts or electrical components in a certain sequence. Even though materials and procedures may not be *identical* to what the examinee would be doing were he placed on an actual fac-

tory assembly line, the work sample nevertheless is far closer to the reality of work than a paper-and-pencil test intended to measure the same ability.

Some other work sample systems described here utilize a different approach: although measurement is based on observing behavior as in the above description, the tasks required in the sample may actually be *abstracted* from real job tasks, so that the samples do not especially resemble the jobs for which they are measuring traits. Although work sample systems of this sort have lower "face validity" (that is, resemblance to real jobs which, among other things, can increase client acceptance of and motivation for assessment), they can permit measurement that is more clearly related to whole groups of jobs and job skills, such as those in the DOT.*

The development of standardized work samples for use in appraising work-relevant characteristics is basically the same regardless of the job types or the client population of interest. Occupational areas are selected, particular jobs analyzed in order to identify their functional components, and work sample tasks devised that will represent some or all of these activities. The job analysis itself may be performed through questionnaires sent to employers, interviews with supervisors or actual observation of the job-in-process. Development of normative, reliability and validity data then can proceed as for any other assessment technique.

Much has happened in the field of work sample systems since the early efforts mentioned above. Since the author's 1972 discussion on this subject, there has been a considerable proliferation of commercial development in this field. Here, a total of 13 systems are described, following the same capsule format as used for the paper-and-pencil instruments. Included are "old-timers" such as TOWER and J.E.V.S. plus newcomers such as COATS (which actually includes components other than work samples in its system) now being very heavily promoted for use in employment and training agencies.

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TITLE OF SYSTEM: **Comprehensive Occupational Assessment and Training System (COATS)**

DESCRIPTION: Multicomponent assessment system measuring living skills, employability attitudes, work performance capability, and job matching

FORMAT: There are four basic components to COATS: job matching, employability attitudes, work samples and living skills. The 10 work samples are each packaged separately in a portable container. PREP, Inc., the developer of COATS, estimates that it requires from 28 to 60 hours to complete the entire process. Administration is audio-visual in format and, except for the work sample component which does require an

*For a discussion of the pros and cons of this approach, see the papers by Dunn, Nadolsky and McDaniel in McDaniel (1977).

evaluator, the evaluation procedures can proceed either with an independent evaluator or with the client alone. Scoring is performed by computer at PREP, Inc.

COATS was originally designed for use in employment and training agencies and in secondary education guidance programs. Separate loose-leaf manuals are provided for each component. These manuals contain details regarding administration, interpretation of results and suggestions for working with clients on each component, as well as a summary of the research studies and developmental methodology used for each component. A separate manual also is provided for each work sample.

Format of the system's four principal components is as follows:

1. **Job Matching System**—This component matches the person with job and training opportunities. The system is based on the degree to which workers approach or avoid 16 specific skill categories. The client uses the program to identify his own preferences, experiences and capabilities in three stages:
   a. *Assessment*—Fifteen audiovisual cartridges present photographs and drawings depicting activities from each of the skill categories. Five cartridges deal with worker preferences, five with experience and five with capabilities.
   b. *Prescription*—The client uses the information gained during the assessment phase to plan and perform activities designed to help him learn about himself and job requirements. These activities are contained in a *Student Handbook*.
   c. *Evaluation*—The client carries out the previously planned exercises and plots his progress.

2. **Employability Attitudes System**—In this component, the client determines what his attitudes and behaviors are and compares them with the attitudes that employers see as being important for the hiring, promoting, or firing of an employee. Thirteen job-seeking attitudes and 23 job-keeping and job-advancing categories are used, again with three stages:
   a. *Assessment*—Six audiovisual cartridges containing what the developer calls 25 "real life" adventures are used.
   b. *Prescription*—Exercises in the *Student Handbook* help the client interpret the results and compare his results with employer data.
   c. *Evaluation*—Clients keep track of their attitude development by charting their activities on Learning Activity Maps. Criteria for successful completion of the activities are given.

3. **Work Samples System**—Presently the COATS contains 10 work samples that were developed on the basis of content analysis of tasks common to job families: Drafting; Clerical-Office; Metal Construction; Sales; Wood Construction; Food Preparation; Medical Services; Travel Services; Barbering-Cosmetology; and Small Engine. The same three stages are involved in the system:
   a. *Assessment*—Instructions are contained in audiovisual cartridges. Each work sample contains occupational information which is used to elicit the degree of client interest in the work sample. The instructions are given in a step-by-step manner and the cartridge stops when a task is to be performed.

b. *Prescription*—After computer scoring, the client uses a *Student Handbook* to interpret his results.

c. *Evaluation*—The client further investigates jobs related to preferred work samples and performs additional job-related tasks that were not included in the work sample.

4. **Living Skills System**—The component deals with what skills are needed to be functionally literate in contemporary society. The program classifies literacy into skills (reading, writing, computation, problem solving, and speaking-listening) and knowledge areas (consumer economics, occupational knowledge, community resources, health, and government-law), and has three phases:

   a. *Assessment*—Six cartridges containing 18 "adventures" are used to evaluate literacy skills and knowledge areas.

   b. *Prescription*—The skills and knowledge areas are reported to the client in a 5×5 matrix. Weak areas are identified using a *Student Handbook*.

   c. *Evaluation*—Individualized objectives are established and the client works toward raising his literacy levels where necessary.

STAGE OF DEVELOPMENT: Loch (1977) describes the initial impetus for development of the COATS system as PREP, Inc.'s awareness that no comprehensive system existed that could provide assessment information across the areas the system now represents. COATS incorporates Cleff's job/man matching system, the Adult Performance Level (APL) measure of functional literacy, and data on work sampling developed by Project CAREER. The orientation of COATS' developers from the beginning was to make the best use of what was already known in the area of vocational assessment and to employ an audiovisual format wherever possible. Details of the development of COATS is available in Loch (1977) and in several research reports published by PREP, Inc.

Evaluation of the COATS system thus far has been relatively informal, mostly clinical estimates of the utility of the system by users. Selected components of the COATS system, such as the Cleff job/man matching system, have been subjected to more extensive evaluation (see description of Cleff system above).

APPLICATION: The COATS assessment system has been carefully designed with attention to the best of what is known about client assessment, is specifically intended for employment and training populations and makes good use of audiovisual materials that may be more appealing to the severely disadvantaged than traditional paper-and-pencil testing. It is probably the most complete approach to client assessment now commercially available but is also of potential value in that each of its main four-system components can be used independently. Indeed, the writer has evidence from a number of local employment and training agencies that independent units of COATS are now being incorporated into assessment programs, and it is suggested that any agency considering the implementation of COATS determine first whether the entire system is required, or only part of it. PREP, Inc. provides computer processing of assessment results and training in the use of the system for a fee.

One important caution is that, despite high face validity, the entire COATS system has not yet been evaluated, so its overall effectiveness remains speculative.

ACCESS: Available from PREP, Inc., Trenton, NJ

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TITLE OF SYSTEM: **Hester Evaluation System**

DESCRIPTION: Battery of psychological tests used to measure vocational potential

FORMAT: The Hester Evaluation System is a series of 28 psychological tests, grouped into seven factors and based on the *Dictionary of Occupational Titles* analysis of worker traits required for different kinds of jobs. The system's developers suggest that about five hours is required to complete all of the testing. The client completes 28 paper-and-pencil tests, after which computer scoring is available through Chicago Goodwill Industries.

The score groups are as follows: unilateral motor ability, bilateral motor ability, perceptual-motor coordination, intelligence, achievement and physical strength. A number of standard psychological tests are used as part of this battery, and most do not require reading abilities since they are not verbally oriented tests. Once testing is complete (including interview input on the client's orientation towards people activities at work), data are input to the computer, and a report is returned to the counselor. This report includes a printout of worker trait groups identified as likely matches, based on information supplied about the client, and a selected list of job titles together with their physical limitations, working conditions, GED, etc.

Reliability and validity data are available in the Hester manual, although the amount of validity evidence presented directly is very limited.

STAGE OF DEVELOPMENT: General information about the Hester Evaluation System is available in Taylor (1977).

APPLICATION: The Hester Evaluation System provides considerable information regarding clients' psychophysiological and perceptual-motor characteristics. The extent to which this information would be directly useful in employment and training settings, even given the Goodwill computer report printout of worker trait groups and specific jobs, would depend upon what kinds of clients and potential services were included. Also of concern is the lack of validity data on the system, although some of the individual tests within it are well-validated psychological instruments.

ACCESS: Available from Goodwill Industries of Chicago, IL

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TITLE OF SYSTEM: **Jewish Employment and Vocational Service (J.E.V.S.) Work Sample System**

DESCRIPTION: Package of 28 work samples designed primarily for use in vocational assessment of disadvantaged and physically disabled people

FORMAT: The J.E.V.S. System was originally developed for disadvantaged populations. The system is organized around the worker trait group arrangements found in the *Dic-*

tionary of Occupational Titles. The 28 work samples that constitute the system represent 10 of these worker trait groups: (1) handling; (2) sorting, inspecting and measuring; (3) tending; (4) manipulating; (5) routine checking and recording; (6) classifying and filing; (7) inspecting and stock checking; (8) craftsmanship; (9) costuming, tailoring and dressmaking; and (10) drafting. The samples are intended to be administered progressively with the client starting with the simplest work sample and proceeding in order through the system to the most complex. The work samples are administered in an environment which resembles a real work situation as closely as possible. Contact with the evaluator is minimized in that feedback on performance and behavior occurs at the end of the evaluation process.

An evaluator's handbook is supplied with the system. It contains details regarding layout, administration and scoring of the work samples. Most instructions are oral and demonstrated. Written instructions are used only when reading is a typical requirement in the worker trait group being sampled.

Data generated by the J.E.V.S. System include observations made by the evaluator on clients as they progress through the work samples. These systematic observations are made on a list of clearly defined work-related behaviors and performance factors. Observations are made on the work sample record sheets provided with the system. At the end of each day's work, these observations are summarized on daily observation sheets. Finally, information from the work sample record sheets and daily observation sheets is summarized into a final report form. The final report form contains information about the client's interests, aptitudes and work behaviors.

Time spent on each work sample is recorded on client record sheets. In addition, client output is checked for errors. The evaluator's handbook defines what constitutes errors for each of the work samples. Time in minutes and number of errors is converted to three-point rating scales using the client norms.

The latest revision and expansion of the J.E.V.S. System norms tables was published in 1976. Data were gathered on 1,072 persons from 32 facilities throughout the United States. Overall norms and differential norms for sex and type of facility (Vocational Rehabilitation, Employment and Training, Goodwill, School and Mentally Retarded School) are now available.

Purchasers of the J.E.V.S. System must buy the whole system. Individual work samples are not supplied. The system is sold only to facilities willing to send an evaluator to Philadelphia for a one-week training program. Included in the price of the system is an on-site training visit made by a J.E.V.S. vocational consultant. During this visit, the entire facility's staff is oriented to the work sample system and is assisted in the setting up of an effective evaluation unit. In addition, referring personnel are taught how to best utilize work sample results.

STAGE OF DEVELOPMENT: The Jewish Employment and Vocational Service of Philadelphia first developed work samples at its Work Adjustment Center, a vocational rehabilitation facility. Through the 1950s and the early 1960s, Work Adjustment Center personnel developed approximately 150 work samples for use with the clients served by their work adjustment program. These work samples formed the basis of what was later to become the J.E.V.S Work Sample System. The transformation of these samples into the J.E.V.S. System was accomplished with the support of the U.S. Department of

Labor. After the relationship between J.E.V.S. and the Department of Labor ended, J.E.V.S. became the sole supplier of the system for the entire United States.

Normative, reliability and validity data are available from the publisher and also are reported in several research documents (J.E.V.S., 1968). The test publisher reports that more than 400 J.E.V.S. Work Sample Systems are currently in use throughout the United States.

APPLICATION: Already in use in a large number of employment and training agency settings, the J.E.V.S. Work Sample System would appear to have operational capability for further applications, although the cost of using this fairly complicated system, which requires five to seven days to complete with the typical client, must be considered.

ACCESS: Available from the Vocational Research Institute, Jewish Employment and Vocational Service, 1700 Sansom Street, Philadelphia, PA 19103

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TITLE OF SYSTEM: **McCarron-Dial Work Evaluation System**

DESCRIPTION: Seventeen work samples designed to measure neuropsychological functioning of the mentally retarded and mentally ill

FORMAT: The McCarron-Dial system contains 17 separate instruments grouped into five factors:

1. *Verbal cognitive*—Wechsler Adult Intelligence Scale (or Stanford-Binet Intelligence Scale) and the Peabody Picture Vocabulary Test
2. *Sensory*—Bender Visual Motor Gestalt Test and Haptdic Visual Discrimination Test
3. *Motor abilities*—
   a. Fine Motor Skills Assessment: beads and box; beads on rods; finger tapping; nuts and bolts tasks; rod slide
   b. Gross Motor Skills Assessment: hand strength; finger-nose finger movement; jumping; heel-toe tandem walk; standing on one foot
4. *Emotional*—observational emotional inventory
5. *Integration*—coping, San Francisco Vocational Competency Scale and Dial Behavioral Rating Scale

The tests, tasks and scales (which include both commercially available instruments and some developed especially for this system) are grouped according to the five factors. The WAIS and the Stanford-Binet must be purchased from their appropriate publishers; all other necessary materials are packaged by the McCarron-Dial publisher. A bound offset manual contains all system details for administration, scoring and interpretation.

The evaluation process begins with a client interview and then proceeds with administration of each of the test components. Completion of assessment factors 4 and 5 typically requires a period of placement in a work setting, most commonly a sheltered workshop. The first three factors can be assessed in one day; two weeks of systematic

observation in a work setting are needed to assess the emotional and integration-coping factors. Administration, scoring, norms, format for reporting and so forth are provided in the system manual.

STAGE OF DEVELOPMENT: The McCarron-Dial is designed for the purpose of assessing the mentally disabled person's ability to function. It uses a combination of widely accepted, individually administered psychological tests, assessments of fine and gross motor ability and an extended period of observation. No reliability or validity data are currently available.

APPLICATION: Except for employment and training agencies that might have a significant population of mentally retarded clients, the McCarron-Dial would seem to have limited application although it could be a source of ideas.

ACCESS: Available from Commercial Marketing Enterprises, 11300 North Central, Suite 105, Dallas, TX 75231

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TITLE OF SYSTEM: **Micro-TOWER**

DESCRIPTION: Battery of 13 standardized work samples for assessing vocational aptitudes of rehabilitation clients

FORMAT: The 13 work samples in Micro-TOWER are divided into five general aptitude groups. Four of the samples have alternate forms to prevent copying during administration and for possible use in retesting. Work samples are provided in the motor, spatial, clerical, perception, numerical and verbal areas. All work samples are representative of actual work tasks that individuals being assessed might be called upon to perform in a job (e.g., taking telephone messages). This system is designed for group administration; required instructions to clients are recorded on cassette tapes. Total testing time is about 15 hours. Details on scoring and requirements for training of vocational evaluators are provided in manuals included with the system. A variety of scoring and reporting forms also have been constructed for use with this system.

STAGE OF DEVELOPMENT: The Micro-TOWER system is aimed primarily at a general rehabilitation population, but the publisher asserts it can also be used with special education students, the disadvantaged and adult offenders. The work sample techniques have been designed to measure aptitudes defined and used in the *Dictionary of Occupational Titles*. The results are related to the aptitude requirements for entry-level jobs in specific worker trait groups defined by DOT. A variety of normative data bases are available, and the technical manual for the system includes some evidence on reliability and validity. According to Backman (1977), predictive validity studies are still under way, and results will be shared with users when these are available.

APPLICATION: Micro-TOWER would seem to have some potential for direct application in employment and training settings and may have advantages over some other work sample systems because of its relative brevity and because it can be administered to groups rather than just individual clients.

ACCESS: Available from ICD Rehabilitation and Research Center, New York, NY

TITLE OF SYSTEM: **System Approach to Vocational Evaluation (SAVE)**

DESCRIPTION: Organizing framework for work sample type vocational evaluation of disadvantaged and disabled service recipients.

FORMAT: The SAVE package consists of a compact manual with simple, step-by-step instructions and a supply of forms needed for vocational evaluation in reference to 47 worker trait groups from the *Dictionary of Occupational Titles*.

Included in the package are evaluator instructions, sample figures for easy use of forms, work sample operation sheets and equipment lists, norms and validity information and DOT reference material. The kit includes suggested requirements for setting up work samples to evaluate each of the DOT areas required for a given assessment effort. The test publisher suggests that most needed materials will already appear in schools, evaluation facilities or industrial arts classes. Administration of the full system requires about 14½ hours, and adequate training generally is afforded by careful reading of the materials in the SAVE package.

STAGE OF DEVELOPMENT: The SAVE package was developed primarily to provide a relatively easy and inexpensive way to obtain vocational evaluation information organized according to the schemas within the *Dictionary of Occupational Titles*. The SAVE approach is unique in that commercially available work samples can be substituted for many of its components, and, thus, SAVE can be used as a framework for setting up a vocational evaluation work sample system in a variety of formats. Some limited data on reliability and validity are presented in Cobb (1977).

APPLICATION: The SAVE approach to vocational evaluation is relatively inexpensive and may have some applicability to employment and training agency settings in terms of planning and organizing a work sample-type assessment system. Evidence available for this report was too sketchy to indicate whether the system can be used as more than a source of ideas and planning tools.

ACCESS: Available from SAVE Enterprises, P.O. Box 5871, Rome, GA 30161

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TITLE OF SYSTEM: **Singer Vocational Evaluation System**

DESCRIPTION: System containing some 26 work samples presented in an audiovisual format

FORMAT: At present, the following work samples are contained in the system: sample making, bench assembly, drafting, electrical wiring, plumbing and pipefitting, carpentry, refrigeration-heating-air conditioning, soldering-welding, office and sales clerk, needle trades, masonry, sheet metal, cooking and baking, engine service, medical service, cosmetology, data calculation and recording, soil testing, photo lab technician, and production machine operating. Each work sample is self-contained in a carrel and instructions are given using an audiocassette tape and film strip format, with the client controlling the rate of advancement. This programmed material is occasionally supplemented with written material. If all 20 work samples are given, approximately three weeks may be required for the total assessment process. Administration and scoring

information are provided in a printed manual bound in a loose-leaf folder. Standardized forms are included for performance and interest rating and for summarizing results.

STAGE OF DEVELOPMENT: The Singer Company's involvement with the rehabilitation and employment and training fields began when it won a contract in 1965 to operate a Job Corps center. Since then, a division of Singer has become one of the leading private operators of Job Corps centers in the nation. The system is based in part on TOWER (described later in this section), and since its initial introduction in late 1971 has been adopted by approximately 1,000 agencies, schools and institutions. The system's approach is predicated upon a combination of subject self-evaluation and evaluator observation of task-related behavior and emphasizes self-motivated learning through permitting the evaluee a great deal of latitude in terms of pacing and the possibility of repeating certain samples in the total process if necessary.

The system is intended primarily for special-needs populations (e.g., disadvantaged, mildly retarded, physically handicapped, correctional), but may be used with non-special groups as well. Since it relies on an audiovisual mode of instruction, it has special potential for use with populations having limited reading skills and/or prior aversive experience (or little experience) with paper-and-pencil tests. Gannaway (1977) overviews the system and gives information about the availability of norms. Gannaway also reports some initial reliability data but comments that no predictive validity studies on the system have as yet been published. Informal evidence from actual use of the system and a validity study that was completed but not published at the time of Gannaway's publication are mentioned in the Gannaway paper. Gannaway also reports that a significant revision of the system is currently under way. This will incorporate a number of technological advances as well as improvements based on field experience with the system.

APPLICATION: The Singer Vocational Evaluation System would appear to have significant potential for application within an employment and training agency setting. The System is well supported by the resources for training and consultation of a large commercial enterprise, and the audiovisual format seems particularly well suited for persons with limited reading skills and poor prior experiences with paper-and-pencil tests. However, better decisions about the system can be made after more validity data are available.

ACCESS: Singer Education Division, Career Systems, 80 Commerce Drive, Rochester, NY 14623

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TITLE OF SYSTEM: **Talent Assessment Program (TAP)**

DESCRIPTION: Battery of perceptual and dexterity tests

FORMAT: Eleven tests are included in the system: structural and mechanical visualization, discrimination by size and shape, discrimination by color, tactile discrimination, fine discrimination without tools, gross dexterity with tools, circuital visualization, retention of structural and mechanical detail, and structural and mechanical visualiza-

tion in greater depth. The tests are packaged individually with a spiral-bound offset manual, including some details for administration and scoring. The last test in the battery is for testing the limits with clients who perform extremely well on the first 10 tasks; the developer estimates that only 10 percent of all clients would take this final instrument. Administration is on an individual basis and requires two to two-and-one-half hours.

STAGE OF DEVELOPMENT: This system is designed to provide fine details on the perceptual and dexterity functioning of clients in a variety of settings, and the developer does not claim that the system assesses all vocationally significant capacities and behaviors. In fact, the manual states that other assessment devices should be used in addition to the TAP to obtain a complete evaluation of the client—on factors such as vocational interests, job knowledge, and cognitive and conceptual abilities not measured even indirectly in this battery.

Normative data are available for high school student populations and for several special populations. Some evidence on reliability is given, but there is no data available on validity of TAP. General information about the current development of the system is available in Nighswonger (1977).

APPLICATION: This battery might be of some use for special application in employment and training agencies where the kind of information TAP provides may be useful in making training or placement decisions.

ACCESS: Talent Assessment Programs, 7015 Colby Avenue, Des Moines, IA 50311

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TITLE OF SYSTEM: **Testing Orientation and Work Evaluation in Rehabilitation (TOWER)**

DESCRIPTION: Comprehensive work sample assessment battery designed primarily for use with the physically disabled

FORMAT: The TOWER consists of over 110 work samples in the following 14 broad occupational groups: clerical, drafting, drawing, electronics assembly, jewelry manufacturing, leather goods, lettering, machine shop, mail clerk, optical mechanics, pantograph engraving, sewing machine operating, welding, and workshop assembly (Rosenberg, 1973).

The TOWER system is designed primarily to estimate handicapped clients' present skills, learning potential and job-training needs. Job-performance factors such as speed, accuracy, mechanical aptitude, personality variables and attitudes are assessed. Among the latter are work habits (neatness and industriousness), success in relationships with supervisors or fellow workers, attendance and punctuality, work tolerance and reaction to the total work situation (ability to adjust to the noises, temperatures, odors and activities typical for industrial jobs), frustration tolerance, personal grooming, and personal hygiene.

Thus, in addition to providing data about job aptitudes and skills, the TOWER system constitutes a clinical tool that can be used to make inferences regarding a client's emotional and attitudinal adjustment to work, work-related habits and other personal

characteristics important to job success. A skilled evaluator can use behavioral observations from work samples in much the same way that a clinician uses preferred psychological test instruments.

Administration of the TOWER system takes from five to seven weeks, during which time the examinee is exposed to all work samples within his or her physical and intellectual capacities. The Institute for the Crippled and Disabled has used TOWER to evaluate more than 6,000 orthopedically and emotionally handicapped clients during the past 20 years. The Institute also has assisted other rehabilitation facilities in implementing and using the TOWER system, primarily through a series of training sessions at ICD (attended by over 250 vocational evaluators since 1957).

STAGE OF DEVELOPMENT: The TOWER is probably the best-known work sample system in existence (Rosenberg, 1973). TOWER has been widely applied in rehabilitation settings. Judging from testimonial evidence, the TOWER system seems to have considerable potential for use in vocational evaluation of the physically and mentally handicapped. Both clients and rehabilitation workers speak glowingly about the utility of the assessment experience and the data it gathers. However, the applicability of the system to the culturally disadvantaged has not been clearly demonstrated. Moreover, the empirical evidence bearing upon the predictive validity of TOWER for vocational decision making has been, at least thus far, somewhat disappointing.

In one of the major studies of TOWER's practical utility, Rosenberg (1967a) found that TOWER scores were, in general, not as successful in predicting vocational success as were training instructors' rating of clients. Correlations between TOWER scores and vocational instructors' ratings were low, rarely exceeding .19. These discouraging findings plus difficulties in implementing the system in widely varying facilities with varying job markets led Rosenberg (1967b) to conclude that "the true validity of TOWER remains unknown" (p. 48). These findings temper somewhat the glowing testimonials from rehabilitation workers and clients.

Rosenberg (1977) presents an update on evidence available for the usefulness of the TOWER system. Ultimately, there is insufficient evidence as to the predictive validity of the system, although Rosenberg comments that it is difficult to conduct research designed for specific validation purposes because of the interrelationship of this type of vocational assessment with other aspects of the service-delivery process.

APPLICATION: The TOWER system is quite lengthy and complex, and it has been designed primarily for a rehabilitation population. It might also be applicable in certain employment and training settings, although the issues of administration time, validity and basic cost would need to be carefully considered.

ACCESS: ICD Rehabilitation and Research Center, 340 East 24th Street, New York, NY 10010

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TITLE OF SYSTEM: **Valpar Component Work Sample System**

DESCRIPTION: System with about 26 work samples for use with industrially injured workers

FORMAT: Samples in the system include: small tools, size discrimination, numerical sorting, upper extremity range of motion, clerical comprehension and aptitude, independent problem solving, multilevel sorting, simulated assembly, whole body range of motion, tri-level measurement, eye-hand-foot coordination, and soldering. The work samples were developed and are intended for use as individual components and are not grouped as an evaluation system. Separate offset manuals are provided for each work sample. Information on administration, scoring and norms is available in the manuals.

STAGE OF DEVELOPMENT: The Valpar system provides individual work samples that appear to be relatively easy to administer and score. Individual work samples could be easily incorporated into an existing evaluation program. However, there are difficulties in that the forms and coordinated information required for use of all the 12 samples as a system are not supplied. Normative information is available, and some data on reliability; no validity data apparently are available.

APPLICATION: The Valpar would appear to be most useful in employment and training settings where there are a significant number of industrially injured workers to be served. Then the information provided about range of motion and other factors included in this system could be of real value.

ACCESS: Valpar Corporation, 655 North Alvernon, Suite 108, Tucson, AZ 85716

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TITLE OF SYSTEM: **Vocational Information and Evaluation Work Samples (VIEWS)**

DESCRIPTION: Work sample system especially designed for mentally retarded persons

FORMAT: The 16 work samples in this system are organized according to the *Dictionary of Occupational Titles*, and include samples in elemental, clerical, machine and craft areas of work. Fourteen of the work samples are individually packaged in portable plastic cabinets. Drill press and machine-feeding work samples are permanently mounted on a sturdy work table. A comprehensive manual contains all administrative details, such as set-up, evaluator and client instructions and scoring procedures. Completion of the entire system requires 20 to 35 hours. The samples are intended to be administered by evaluators trained specifically in the VIEWS System.

VIEWS evaluates the vocational potential of the mentally retarded for jobs in six worker-trait groups according to the DOT. This system focuses on job areas that are very common in the national economy and, more important, job areas where many retarded persons have found successful employment. It also separates learning of skills from actual performance, and clients are first taught the task thoroughly, prior to performing it under timed conditions for vocational assessment.

Observations are made by the evaluator as clients progress through the work samples. These observations are made on a work sample record provided with the system. At the end of each day's work, these observations are summarized on a daily observation form. Standardized behavior observations are combined with ratings for learning, time and quality of performance to produce a well-organized report.

STAGE OF DEVELOPMENT: Industrial time standards, Modular Arrangement of Predetermined Time Standards (MODAPTS), are available as well as normative data on a client population. This norm group is currently being expanded to include data from some of the 200 VIEWS systems currently in use throughout the country. To date, no reliability or validity data have been reported.

APPLICATION: VIEWS would be appropriate for employment and training settings where a significant number of mentally retarded individuals are being served, although the system has not yet been validated.

ACCESS: Available from the Vocational Research Institute, Jewish Employment and Vocational Service, 1700 Sansom Street, Philadelphia, PA 19103

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TITLE OF SYSTEM: **Vocational Interest Temperament and Aptitude System (VITAS)**

DESCRIPTION: Work sample system designed explicitly for disadvantaged applicants in CETA programs

FORMAT: VITAS is a vocational assessment system. It includes a battery of hands-on activities to be used in a simulated work environment. It assesses work potential in terms of interests, temperaments and aptitudes, as defined by the U.S. Department of Labor in its *Dictionary of Occupational Titles* and its General Aptitude Test Battery. Assessment requires two-and-one-half days. One work sample administrator and one aide can assess up to five participants at a time.

The system includes 21 work samples constructed of durable, reusable equipment and materials. Software includes report forms and a detailed manual containing standardized procedures for setting up, administering and scoring VITAS. A representative of each facility purchasing VITAS comes to Philadelphia for a week of training with the developer that focuses on work sample theory and technology, report-writing skills, recording observations, and specific instruction in the administration of each VITAS work sample. An optional, extra-cost consultation visit by a representative of the developer may also be obtained for further work in implementing the VITAS battery on site

There are five steps in the VITAS process: (1) an orientation interview; (2) administration of the work samples; (3) a motivational group session conducted at the end of the first day of evaluation to reduce anxiety and increase client motivation; (4) a vocational interest interview which gives feedback on participants' performance and provides a beginning for the counseling process; and (5) report writing leading to final vocational recommendations for consideration by the client's counselor. VITAS relates to 15 of the major worker-trait group arrangements in the DOT.

STAGE OF DEVELOPMENT: Normative data are provided, but reliability and validity data are not yet available.

APPLICATION: VITAS is one of the few work sample systems that has been developed explicitly for use with disadvantaged populations in CETA programs. It has been oriented specifically to provide the kind of input and to be arranged in the kind of format that would make it maximally useful in an employment and training agency setting.

These advantages make it worthy of serious consideration by such agencies, although it is still in an early stage of development and no data on its actual utility are yet available.

ACCESS: Available from the Vocational Research Institute, Jewish Employment and Vocational Service, 1700 Sansom Street, Philadelphia, PA 19103

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TITLE OF SYSTEM: **Wide Range Employment Sample Test (WREST)**

DESCRIPTION: Work sample system for primary use with mentally retarded and physically handicapped individuals

FORMAT: The 10 work samples are: single, double folding, pasting and stuffing; stapling; bottle packaging; measuring; screw assembly; tag stringing; scratch pasting; collating; color and shade matching; and pattern making. Each work sample is independent, and a spiral-bound manual with photographs presenting system details is available. The system may be administered either individually or in groups; administration time is about one-and-one-half hours for a single client; small groups of three to six persons take about two hours. For each work sample, the manual describes the purpose and gives the materials, scoring information and instructions. A photograph is used to insure proper layout. A summary-of-results form is provided to record performance and general remarks; no final report format is specified by the developer.

STAGE OF DEVELOPMENT: The WREST consists of 10 short, low-level tasks apparently designed to assess mainly the manipulation and dexterity abilities of the client. The WREST has been used primarily in sheltered workshops dealing with mentally retarded and physically handicapped clients, usually for initial assessment before assignment to suitable work projects. There is an emphasis upon repeating the work samples many times to provide an evaluation of the client's ability to improve performance under repeated practice conditions, a technique especially useful with mentally handicapped individuals. There are some problems in the system because of the lack of systematic behavior observation as part of the work sampling procedure, failure to relate results to the competitive job market, and the lack of specification of report procedures so that the results of assessment can be conveyed back to counselors or others who would need to use them. Some reliability estimates are presented in the manual materials, and there are normative data but these are not identified in terms of what kinds of individuals are represented. No validity data are available.

APPLICATION: The WREST would seem to have somewhat limited utility for employment and training agency settings unless an agency were required to serve a significant mentally retarded population. Then the simple kinds of tasks the battery assesses might be relevant to job opportunities actually available in the open market. Considerable adaptation in terms of developing norms and making these connections to the local job market explicit would be required for use of the WREST in an actual agency setting.

ACCESS: Guidance Associates of Delaware, Inc., 1526 Gilpin Avenue, Wilmington, DE 19806

Advantages and Disadvantages of Work Sampling

To date, validity studies of the work sample technique for assessing the severely disadvantaged have been encouraging but hardly conclusive. An unresolved question concerning the work sample approach centers on cost benefit: Given that work sample assessment may be much more expensive and time consuming than more traditional paper-and-pencil test battery approaches, is the increase in information useful to decision making great enough to outweigh the increased cost as compared to other alternatives?

There also are questions regarding whether the success of work sample systems under experimental conditions can be repeated in routine operations. For example, consider these alternate explorations for positive results in a 1968 study of the J.E.V.S. system:

1. Counselors were at the outset given a "pitch" for the utility of work sample assessment, which they must have believed, at least in part, since they referred clients to the work sample center not for experimental purposes but because they felt a need for especially comprehensive information on given clients (J.E.V.S., 1968, p. 48). Thus the counselors may have had a "success set" for experimental group subjects that led them to make more intensive efforts for this group.

2. Part of the benefit to work sample evaluees may have accrued from the extra attention they received from the experience of working for pay over a period of two weeks or from being a part of a "special" program. In the J.E.V.S. study, evaluees may have been supported and encouraged substantially by VISTA volunteers who went out looking for those who did not show up at the Center as scheduled. Increases in job productivity as the result of such special attention are a classic finding of studies in work behavior.

The question then becomes: How much of the improvement in training completion and placement-success rates was due to *work sample assessment*, and how much was due to *program circumstances* surrounding the evaluation? One of the benefits claimed for the work sample approach is the provision of work experience for clients whose contact with the world of work is quite limited. If this is merely a "fringe benefit" of relatively minor significance compared to the improved quality of information obtained, then work sample assessment may be justified. On the other hand, if it is the work experience itself that induces most of the improvements in training or placement success, there may be far less expensive ways of providing this benefit, e.g., by eliminating the cost of training and maintaining a work sample evaluation staff. Or, a very small number of evaluators may be adequate for collecting data on

a large number of enrollees if work experience itself is the most important aspect of the work sample. Only comparative experimental investigations can establish the relative contributions of positive work experiences, counselors' expectations and work sample assessment results to the overall success of a work sample evaluation project.

It is important that the work sample "package" accurately reflect labor market conditions of the employment and training program in question. A recurrent complaint about available packages is that they are not adequately tailored to reflect local realities, so that one of the important R&D efforts yet to be undertaken is a study of how the work sample assessment technique *in practice* can be made more flexible. In principle, samples can be constructed for any job, at least for those involving mostly physical activities and skills. Further work needs to be done, however, in order to make this assessment strategy easily adaptable to local conditions.

Despite impressive testimonial evidence for the work sample, including its enthusiastic endorsement by some employers, there may be some question about the general acceptance of the technique for selection decisions. An employer who is accustomed to a GATB profile may be very suspicious of a work sample report based on a measurement method quite different from traditional paper-and-pencil tests. Expansion of work sample assessment, therefore, may depend upon efforts to inform and convince employers of the technique's utility.

Finally, work sampling may well be most efficient for in-depth vocational exploration rather than for specific placement decision making. Two to seven weeks of assessment may provide much more information than is necessary for many purposes. If, at a particular time, a given employment and training program can place its clients only in a very restricted number of jobs or has a limited number of training alternatives to offer, the detailed information provided by extensive work sample assessment may be too costly.

A few very simple tasks may provide the information necessary to make valid choices among only a few alternatives. The concept of the work sample might be used, therefore, in selecting applicants to be placed on one specific job. For example, when selecting janitorial personnel, applicants might simply be asked to clean up a room. A supervisor-trainer can point out mistakes after watching the applicant's first try and then observe how the individual does on a second room. Observations may provide information useful to placement decisions. Doubtless there are many ways in which the work sample technique could be developed along these lines. Actual utility of such simplified work samples would, of course, need to be established through research study. And when a greater diversity of opportunities is available (as when improving economic conditions have broadened the job market), work samples used must be sufficiently complex to permit finer discriminations to be made.

Comprehensive information on the work sample systems discussed in this section is available in Botterbusch (1976, 1977). Some general background on use of work sampling systems is provided in Dunn (1976, 1977), McDaniel (1977), Nadolsky (1973, 1977), and Botterbusch & Sax (1977). The latter provides a useful set of considerations for the selection of a commercial vocational evaluation system. Some of the issues raised here regarding cost effectiveness of work sample systems are given more thorough discussion in a study sponsored by the Vocational Evaluation and Work Adjustment Association (1975).

PRETESTING ORIENTATION MATERIALS

For many severely disadvantaged clients, assessment is an anxiety-provoking experience, about which they may have considerable doubt and suspicion. As Seiler (1970) has pointed out, high drop-out rates during the early stages of client participation in service programs may, in part, reflect disadvantaged applicants' rejection of testing. Many of these people perceive assessment as unpleasant, incomprehensible, or unrelated to helping them get a job. They do not understand the purpose of testing, are unfamiliar with tests and fear group-testing situations. Much of their fear may stem from limited but aversive contacts with tests in school settings or from inability to read items or directions phrased at too high a reading level, or both.

One partial solution to this problem is to give disadvantaged clients some type of pretesting orientation. This experience may reduce distorting effects of individual differences in familiarity with test content, ability to understand directions, or rejection of assessment out of fear or lack of motivation. Moreover, it may be possible, through such pretesting experiences, to identify individuals for whom standard paper-and-pencil tests are inappropriate because of low reading levels. These persons may then be guided into alternative assessment procedures (clinical interview, work sample, etc.) in which their handicaps will not interfere with an effort to identify and measure job-related personal characteristics. Both the U.S. Employment Service and The Psychological Corporation have devised pretesting orientation materials, which are summarized below.

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TITLE OF PRETESTING ORIENTATION MATERIAL: **Test Orientation Procedure**

DESCRIPTION: Practice materials designed to help applicants learn how to take tests

FORMAT: The Psychological Corporation's multimedia pretesting orientation materials are intended to serve as a preface to any kind of vocational assessment or selection testing. The aim is to reduce anxiety and increase "test wiseness" by offering practice in

taking tests. The materials, designed for group administration, guide the group through a half-hour session of easy test-like exercises in a 20-page practice booklet. A tape recording is used to provide directions and explanations. A second 20-page booklet with similar test materials is then provided for further take-home practice prior to the actual testing experience. There are five tests in all—speed and accuracy, spelling, vocabulary, arithmetic and information. There is also a job application form for the individual to fill out.

STAGE OF DEVELOPMENT: These materials have been well developed and formatted and have been available for some years through the test publisher.

APPLICATION: As part of a pre-assessment procedure, the Test Orientation Procedure might be a useful component of an overall assessment system in an employment and training agency.

ACCESS: Available from The Psychological Corporation, New York, NY

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TITLE OF PRETESTING ORIENTATION MATERIAL: **USES Pretesting Orientation Exercises**

DESCRIPTION: Miniature test battery for use in pretesting orientation

FORMAT: The exercises are administered as a series of short tests whose items resemble the first eight parts of the GATB. Administration time requires about one-and-one-half hours. The exercises offer practice in test taking to individuals who possess minimum literacy skills for taking the GATB but who may have little experience with aptitude tests and may be uneasy about being tested. Their use in pretesting orientation sessions will provide disadvantaged applicants scheduled to take the GATB with experience in group test taking in a nonthreatening atmosphere. The exercises are flexible enough that they can be shortened for individuals who need only a refresher orientation to tests, or they can be presented in full.

STAGE OF DEVELOPMENT: These materials were developed by USES for specific use with the GATB and have been applied in many employment and training settings.

APPLICATION: Although most useful for those agencies that administer the GATB as part of their assessment battery, the exercises could be usefully employed as part of a more general pretesting orientation exercise.

ACCESS: Division of Testing, Employment and Training Administration, U.S. Department of Labor, Washington, DC 20213, or through state Employment Service offices

Note: The U.S. Employment Service has two booklets available (in both Spanish and English) for self-orientation—*Doing Your Best on Aptitude Tests* and *Doing Your Best on Reading and Arithmetic Tests*. A "pretesting orientation on the purpose of testing" training course also is available, consisting of an illustrated lecture discussion with pictures and a prepared script.

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APPENDIX A

Summary Chart

Special Assessment Techniques for the Severely Disadvantaged

Following is a list of all the special assessment devices for severely disadvantaged persons reviewed in this volume. Each entry includes the number of the page where the device is discussed in the text, and there is also a notation of the main purpose for which the technique was devised and its present stage of development.

PAPER-AND-PENCIL TESTS

Assessment Technique	Page	Purpose	Stage of Development
Adult Basic Learning Examination (ABLE)	8	Mental ability test for use in counseling/program decision making	Operational, though validity data are lacking
Basic Occupational Literacy Test (BOLT)	9	Mental ability test for use in counseling/program decision making	Operational
Biographical Information Blank (BIB)	9	Brief instrument for use in job and training placement decision making and screening	Validation
Colorado Battery	11	Group of tests for research use	Experimental
Fundamental Achievement Series (FAS)	12	Mental ability test for use in counseling/program decision making	Operational
GATB/NATB Screening Device	12	Instrument for quick decision making regarding whether GATB or NATB should be administered	Operational
Goodwin Work Orientation Questionnaire	12	Instrument for counseling and for research use	Experimental; some validation work
Indik Work Motivation Scales	13	Group of instruments for research use	Experimental
Jorgensen Interpersonal Relationships Scales	13	Group of instruments for research use	Experimental
Mandell NYC Program Interview Forms	14	Group of instruments for research use	Experimental
Nonreading Aptitude Test Battery (NATB)	15	General ability-screening device for use where GATB is inappropriate	Operational

Oral Directions Test	15	Instrument for use in counseling	Operational
Picture Interest Exploration Survey (PIES)	16	Inventory for determining vocational interests	Operational, though validity data are lacking
Program for Assessing Youth Employment Skills (PAYES)	16	Battery of paper-and-pencil tests for disadvantaged youth	Operational, though validity studies still under way
Self Interview Check List (SICL)	17	Check list for use in Cleff Job/Man Matching System	Operational, though with only limited validity data
Tolerance for Bureaucratic Structure Scale (TBS)	18	Device for research use	Experimental
Tseng Rating Scales	19	Device for research use	Experimental
Vocational Opinion Index (VOI)	19	Device for research use	Experimental; some validity data available
Work Relevant Attitudes Inventory (WRAI)	20	Device for research use	Experimental; some validity data available

WORK SAMPLE SYSTEMS

Assessment Technique	Page	Purpose	Stage of Development
Comprehensive Occupational Assessment and Training System (COATS)	22	For use in counseling and employment/training placement decision making	Operational, though validity data are very limited
Hester Evaluation System	25	For use in counseling and employment/training placement decision making (psychophysiological data only)	Operational, though validity data are limited
Jewish Employment and Vocational Service (J.E.V.S.) Work Sample System	25	For use in counseling and employment/training placement decision making	Operational; some validity data available
McCarron-Dial Work Evaluation System	27	For use in counseling and employment/training placement decision making (restricted to neurophysiological functioning of mentally retarded)	Operational; no validity data are available
Micro-TOWER	28	For use in counseling and employment/training placement decision making	Operational; validity studies are under way

System Approach to Vocational Evaluation (SAVE)	29	For use in counseling and employment/training placement decision making (organizing framework for use with other work sample systems)	Operational; limited validity data available
Singer Vocational Evaluation System	29	For use in counseling and employment/training placement decision making	Operational; no validity data are available
Talent Assessment Program (TAP)	30	For use in counseling and employment/training placement decision making (limited to perceptual and dexterity functioning)	Operational; no validity data are available
Testing Orientation and Work Evaluation in Rehabilitation (TOWER)	31	For use in counseling and employment/training placement decision making	Operational; validity studies show modest results
Valpar Component Work Sample System	32	For use in counseling and employment/training placement decision making	Operational; no validity data are available
Vocational Information and Evaluation Work Samples (VIEWS)	33	For use in counseling and employment/training placement decision-making (for use with the mentally retarded)	Operational; no validity data are available
Vocational Interest Temperament and Aptitude System (VITAS)	34	For use in counseling and employment/training placement decision making	Operational; no validity data are available
Wide Range Employment Sample Test (WREST)	35	For use in counseling and employment/training placement decision making	Operational; no validity data are available

PRETESTING ORIENTATION MATERIALS

Assessment Technique	Page	Purpose	Stage of Development
Test Orientation Procedure	38	To help reduce client anxiety and improve validity of assessment performance	Operational
USES Pretesting Orientation Exercises	39	To help reduce client anxiety and improve validity of assessment performance	Operational

APPENDIX B

Resources for Assessment of Disabled Persons

Employment and training agencies today are serving more physically disabled clients than ever before. These clients often require special assessment approaches not needed for most other clients. The purpose of this appendix is to list some information resources relevant to this subject.

The Employment Service recently has published a guidebook, entitled *Placing Handicapped Applicants: An Employment Service Handbook*, for use by employment and training agencies concerned with developing services for the disabled. The assessment process may be set in better context by referring to this handbook, which is available through state Employment Service offices or the U.S. Employment Service.

The most important single resource for information about assessment of disabled individuals is the Materials Development Center (Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout, Menomonie, Wisconsin 54751). This center provides a variety of informational products and services related to vocational evaluation of physically disabled persons.

Of special relevance to assessment program developers desiring to implement work sample systems are two publications that have already been mentioned: Botterbusch (1976), *A Comparison of Seven Vocational Evaluation Systems;* and Botterbusch (1977), *A Comparison of Four Vocational Evaluation Systems*. These publications provide detailed information, including evaluative reviews, of the major work sample systems also described in this *Manual*. Moreover, MDC has available a series of tape/slide presentations on 13 of the commercial vocational evaluation systems that were described in the volume (J.E.V.S., Singer, TOWER, etc.). These presentations can be loaned to qualified users, rented or purchased.

Another important reference is Botterbusch (1976), *The Use of Psychological Tests with Individuals Who Are Severely Disabled*. This helpful guidebook is designed to provide vocational evaluators and other professionals with practical guidelines for selecting, adapting and administering standardized psychological tests to individuals who have sight, hearing and academic handicaps. It contains a wealth of information, including standards for making modifications and a comprehensive list of references plus addresses of test publishers. Botterbusch is also the author of *Psychological Testing in Vocational Evaluation* (1978), which includes a background section on the purpose of tests and how to select them, along with a careful review of specific tests relevant to vocational evaluation.

The Materials Development Center also is the publisher of *Work Evaluation and Adjustment: An Annotated Bibliography 1947-1977* (Ronald R. Fry, 1978). This bibliography contains 1,296 annotations and is probably the most comprehensive citation reference volume in existence on assessment of the dis-

abled. A supplement, *Work Evaluation and Adjustment: An Annotated Bibliography, 1978 Supplement*, also by Fry and published in 1979, provides a further updating of this literature. Finally, *Suggested Publications for Developing an Agency Library on Work Evaluation and Work Adjustment* (1978) suggests 54 essential print references in this area, including 27 available from MDC.

The Materials Development Center offers a range of other services for eligible individuals and institutions. Those eligible to receive these services may write in to receive loan copies of publications of the Center or of a number of other documents contained in their library collection. No employment and training agency considering the implementation of a work sample system in its assessment function should fail to contact the Materials Development Center; it is a uniquely valuable resource. The Center would be of perhaps less central, but still very important, assistance whenever assessment of the disabled is a concern of the employment and training agency assessment program.

Another important reference volume for assessment of physically disabled individuals is *Testing for Impaired, Disabled and Handicapped Individuals*, prepared by the American Alliance for Health, Physical Education and Recreation (1201 16th Street, N.W., Washington, DC 20036). This volume provides an overview of testing concepts and then describes psychological tests in the areas of physical fitness and motor ability, perceptual motor development and psychomotor tests, developmental profiles, and several locally developed assessment devices for use with physically disabled persons.

When more general background information about assessment of disabled persons may be required, the following information sources may be of value:

ICD Research Utilization Laboratory
340 East 24th Street
New York, NY 10010

Michigan Rehabilitation Research Institute
1323 School of Education
University of Michigan
610 East University
Ann Arbor, MI 48109

National Clearing House of Rehabilitation Training Materials
Oklahoma State University
115 Old U.S.D.A. Building
Stillwater, OK 74074

National Rehabilitation Information Center
Catholic University
Washington, DC 20064

These are all clearinghouses funded by the Rehabilitation Services Administration, which compile information on subjects such as program evaluation and the vocational rehabilitation process in general.